[0039] In one specific embodiment, this iterative etch process is performed utilizing an etch system like that described above. Referring again to FIG. 1, the semiconductor substrate 114 is placed on the substrate support pedestal 116 and initial gaseous components comprising plasma source gases appropriate for anisotropic etching, for example, SF_6 and HBr and O_2 can be supplied from gas panel 138 to the process chamber 110 through inlets 126 to form a gaseous mixture 150. For example, the SF_6, HBr and O_2 flow rates can each be about 50 sccm. The gaseous mixture 150 is ignited into a plasma 152 in the process chamber 110 by applying RF power preferably in the region of a 1000W of source power and 20W bias power from the RF source and bias generators 118 and 122, respectively, to the antenna segment 112 and the substrate support pedestal 116. The pressure within the interior of the process chamber 110 is controlled between 10-200 mtorr and preferably in the region of 30 mtorr, using the throttle valve 127 situated between the chamber 110 and the vacuum pump 136. The combination of plasma source gases yields a plasma that anisotropically etches the substrate, typically at a rate of approximately 1-3 microns/minute. The result of an initial anisotropic etch in accordance with the present invention is shown in FIG. 5. As is depicted therein, the anisotropic etch step yields substantially smooth sidewalls 501 and a substantially vertical etch to a desired depth. The vertical sidewalls are due in part to a passivation layer that is provided during the course of this process step.

STATUS OF CLAIMS

Claims 1-23 are pending.